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ABSTRACT

A study of the interrelationships of linguistic and communicative competence in English and Spanish, self-concept, field-independent cognitive style, and scholastic achievement among Mexican-American pupils at the elementary, junior high, and high school levels found that linguistic and communicative competence were highly related within languages, and communicative abilities were also related across languages. Language dominance varied considerably, depending on whether linguistic or communicative tests were used, with linguistic measures increasing Spanish dominance and communicative tests favoring English dominance. Field independence was found strongly related to all measures except Spanish linguistic competence, with the latter having an expected negative relationship to length of United States residence. Self-concept was strongly related to language tests and academic achievement. English language proficiency, achievement, self-concept, and field independence increased with length of U.S. residence and seemed related to acculturation. English linguistic and communicative competence tests related strongly to global English competence evaluation and quantitative measures of language quality in speech samples. Both communicative and linguistic competence measures are recommended for making educational decisions, as well as research on the relationship of motivation types to achievement and special characteristics of students who adapt well to the U.S. (MSE)

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LINGUISTIC AND COMMUNICATIVE COMPETENCE OF MEXICAN-AMERICAN PUPILS AND THEIR RELATION TO MOTIVATION, LENGTH OF RESIDENCE, AND SCHOLASTIC ACHIEVEMENT

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LINGUISTIC AND COMMUNICATIVE COMPETENCE OF MEXICAN-AMERICAN PUPILS AND THEIR RELATION TO MOTIVATION, LENGTH OF RESIDENCE, AND SCHOLASTIC ACHIEVEMENT

Robert L. Politzer

ABSTRACT

This study is an abridged version of a report entitled, "Linguistic and Communicative Competence, Language Dominance, Selected Pupil Characteristics and their Relation to Achievement of Bilingual Pupils" (NIE-G-79-0130). An abstract of the report follows.

The primary concerns of this study were the interrelations of linguistic competence and communicative competence in English and Spanish, self concept, field-independent cognitive style, and scholastic achievement among Mexican-American pupils at the elmentary, junior high, and high school levels.

Linguistic and communicative competence (operationalized primarily as the ability to give or process information) were found to be highly related within languages. Communicative abilities were also related across languages. Language dominance varied considerably, depending on whether linguistic or communicative tests were used, with linguistic measures increasing Spanish dominance and communicative tests favoring English dominance.

Field independence is strongly related to all language measures except linguistic competence in Spanish. The latter has an expected negative relation to length of residence in the United States. Self-concept is strongly related to language tests and, above all, to scholastic achievement. English language proficiency, scholastic achievement, self-concept, and field independence increase with length of residence in the United States and seem to

be related to acculturation. For most individuals a period of four to five years is required to reach levels of language competence required for scholastic achievement. There is also some evidence that the motivation to learn English for practical reasons and the desire to maintain Spanish have a positive relation to scholastic achievement.

Both linguistic and communicative competence tests in English relate strongly to global evaluations of English competence and to quantitative measures of language quality taken from actual speech samples. However, the primary factor influencing global evaluations is linguistic competence and/or the common component of linguistic and communicative competence.

The study recommends use of both communicative and linguistic competence measures for making educational decisions. Suggestions are offered concerning research efforts on a wide range of problems, including the relation of types of motivation to achievement and the special characteristics of students who adapt to United States schools after relatively short residence.

This study highlights the problems related to measurement of communicative competence, the relation of linguistic and communicative competence to each other and to motivation and scholastic achievement, and the role played by length of residence in the United States in language competence and scholastic achievement.

MEASUREMENT OF LINGUISTIC AND COMMUNICATIVE COMPETENCE IN THE CONTEXT OF BILINGUAL EDUCATION

One of the most important and striking developments of the past decade in second-language pedagogy has been the emphasis on teaching communicative competence, in addition to linguistic competence. The latter concept, usually traced to Noam Chomsky's approaches and definitions concerning transfor-

mational grammar, is equated with the mastery of grammatical rules: Linguistic competence is primarily manifested by the ability to produce grammatically acceptable (i.e., "correct") sentences. The concept of communicative competence is far less clear cut. However defined, it relates to an ability that goes, somehow, beyond producing grammatical sentences. Within the United States at least, the recent concern with communicative competence stems largely from sociolinguists who feel that a truly interesting study of language must include its functions in communicative context and the rules that determine social acceptability and appropriateness (e.g., Hymes, 1972).

Recent discussion of the concept of communicative competence (e.g., Politzer and McGroarty, 1983; Oller, 1981; Canale and Swain, 1980; Hellgren, 1982; and Wiemann and Backlund, 1980) makes it clear that the concept has a variety of roots and interpretations. Long before sociolinguistics began stressing social appropriateness as a factor in the teaching and evaluation of language competence, psychologists had been concerned with communicative competence, defined not as the use of language with social appropriateness, but primarily as the ability to receive and convey information (e.g., Flavell et al., 1968 or Wang et al., 1973). This view of communicative competence as the ability to convey or process information or to give and receive instructions continues to strongly influence the pedagogical and measurement concerns of second-language education where it is sometimes referred to as the "functional" (as opposed to the social interaction) aspect of language (e.g., Littlewood, 1981; Carroll, 1978). Another root of the communicative competence concept lies in the pragmatic approach that relates language competence to the ability to perform speech acts that affect the nonlinguistic context (Austin, 1962; Searle, 1969). Communicative competence is the ability to perform speech acts so that they accomplish the outcomes

intended by the speaker. Closely related to both the sociolinguistic and pragmatic views of communicative competence is the view rooted in the notional analysis of language (e.g., Munby, 1978). Communicative ability is viewed essentially as an ability to express formally notional categories required in specific communicative contexts.

The concern with communicative, in addition to or in contradistinction to linguistic competence, has had considerable impact on the field of language testing where the last decade has been characterized by a great deal of discussion of the types of tests stressing communication skills (e.g., Savignon, 1972; Howard, 1980; Brière, 1979; Bartz, 1979; Carroll, 1978). The exact definition of communication skills and the implied definition of communicative competence used in the proposed type of tests varies a great deal from author to author. Typically, tasks like discussion, information giving and reporting, description of events or pictures, ability to perform speech acts, guessing the context of a brief conversation, or judging the appropriateness of a speech act may all be included in the proposed communicative competence testing tasks. The issue of testing communicative as opposed to linguistic competence assumes importance when it is considered in the context of bilingual education. That correct assessment of the language proficiency of limited-English proficient pupils is an essential part of bilingual education and that language testing in bilingual education is in continued need of improvement is generally agreed upon (e.g., see Silverman et al., 1976; Pletcher et al., 1978; Erickson and Omark, 1981). Language tests in Spanish as well as in English must be utilized to determine whether Mexican-American pupils should be placed in bilingual programs, taught in Spanish or English, and whether they are ready to leave bilingual programs, etc. That the use of different tests will lead to different decisions is hardly sur-

prising, though disquieting (e.g., Ulibarri et al., 1981). At any rate, the question of whether communicative as opposed to linguistic competence related testing will give different results is an important one, just as is the question of which type of assessment will show stronger relations to achievement in the school environment. Both questions--the relation of linguistic to communicative competence and their validity as predictors of achievement--are beginning to be addressed by various researchers (see Erickson and Omark, 1981; Day, 1981; Day et al., 1981; Scott, 1981; Overall, 1978; McGroarty, 1982; Rodríguez-Brown and Elías-Olivarez, 1982). It is also a central concern of this study.

STUDENT POPULATION OF THE STUDY

The study was conducted over a three-year period. All subjects were Mexican-American (i.e., students either born in the United States of Mexican parentage or students born in Mexico who immigrated to the United States). With one exception (to be pointed out below), all the testing was done in classes that were part of bilingual education programs.

Most of the data were collected in four schools in a large and highly multi-ethnic school district in central California (the San Francisco/San Jose Bay area). The high school (HS) referred to in this study is the oldest school in the district. It is a four-year high school, with an enrollment of approximately 1,400 students, of whom approximately 64 percent are from Hispanic (mainly Mexican-American) background, 23 percent are non-Hispanic Whites, and the rest from various other (mainly Asian or Pacific Island) minority groups. The school receives bilingual funds and has a range of bilingual education and English-as-a-second-language (ESL) offerings.

The junior high school (JHS) of this research report is a feeder school of the high school mentioned above, consisting of only the seventh and eighth grades. The total school population is about 800 students. Sixty-eight percent of the student population is Hispanic, about 30 percent is non-Hispanic White, with the rest belonging to various minorities. Like the high school, it has a Spanish bilingual program.

Two of the elementary schools (EL1 and EL2) in which this study was conducted are in the same district as the high school and junior high schools. Both elementary schools have approximately 450 students each and a 50-60 percent Hispanic and approximately 25 percent non-Hispanic White student population, with only a sprinkling of minority groups. Both schools have active bilingual programs.

In addition to the data gathered in the four schools mentioned above, this study also utilizes data collected in two additional elementary schools. One of these schools (EL3) is located in a district near one of the other schools in this study. It is a school of some 450 pupils with an approximately 30 percent Hispanic and 40 percent non-Hispanic White enrollment. At the time the data for this study were collected, the school did not have a bilingual program. Most of the Hispanic enrollment in the school was made up of United States born English-dominant pupils. The school was included in the study primarily to establish comparisons with the other schools.

The fourth elementary school referred to in this study (EL4) is located in the Los Angeles area and has an enrollment of some 600 pupils. No precise data concerning the school's ethnic composition are available, though the school population is evidently predominantly Hispanic (60-70 percent). Most of the pupils come from a totally bilingual home environment and the predominant mode of instruction in the school is the bilingual program utilizing

both Spanish and English to varying degrees—typically simultaneously in the same classroom.

For various reasons (e.g., restrictions related to University regulations concerning questionnaires and reservations expressed by the school authorities) some data that would have been of interest in the context of this study could either not be collected or not be collected consistently; e.g., no data were made available concerning the socio-economic status of this study's subjects, and questions concerning place of birth and/or time spent in the United States could not be consistently included in our research.

Data for the various schools are identified by the number of the schools and the year in which the school year ended. According to school and time of test administration, there are nine possible data sets: HS 80, HS 81, HS 82, JHS 81, JHS 82, EL1 80, EL2 81, EL3 80, and EL4 80.

LINGUISTIC AND COMMUNICATIVE COMPETENCE MEASURES

Linguistic Competence Measure

Linguistic competence, defined as the ability to produce or recognize grammatically acceptable structures, is tested, overtly or covertly, in most bilingual language tests utilized in measurement or evaluation in bilingual education programs. Various tests were reviewed and considered for use in this study, among them the tests most widely used and approved for California schools, the **Bilingual Syntax Measure (BSM)**, the **Bilingual Inventory of Natural Language (BINL)**, the **Language Assessment Battery (LAB)**, and the **Language Assessment Scales (LAS)**. (For reference and review of these tests, see Scott, 1981; Pletcher et al., 1978; Politzer et al., 1983.) BSM is primarily designed to elicit specific language structure

in a communicative context; **BINL** evaluates students' responses to questions according to criteria, including the correct use of specific grammatical forms like articles, pronouns, adverbs, subordinate clauses, etc. In the speaking section of the **LAB**, students are evaluated according to the correctness of specific grammatical forms elicited. The **LAS** also contains a section that focuses directly on production of specific grammatical features. After examination of the above tests, as well as others utilized in bilingual education programs, the decision was made to utilize the **Bahia Oral Language Test (BOLT)** (see Cohen et al., 1977) as this study's linguistic competence test. The reason for the decision was that **BOLT** appears to be more oriented toward linguistic competence than any of the other tests mentioned above. It elicits student responses to questions and pictures in the expectation that the responses necessitate and will, therefore, lead to production of specific grammatical forms (e.g., irregular plural, possessive, specific verb tense). Each response is evaluated on the presence or absence of the expected grammatical item: **BOLT** is a nearly pure discrete item linguistic competence oriented test.

Measurement of Communicative Competence: 1980

As noted above, communicative competence can be defined in various ways, all of which would lead to different testing approaches. For the purpose of this study, we decided to experiment with a broad definition of communicative competence that included the ability to convey and process information as well as perform speech acts or recognize the significance of speech acts in a specific social context. Since the research was conducted in schools and the prediction of achievement was one of its main concerns, the emphasis was placed on the ability to convey and process information, an ability predominantly relevant in the classroom and in all school testing situations.

A second decision taken was to construct tests that would, in a sense, stay clear of the method/trait controversy in language testing (e.g., Oller, 1981; Bachman and Palmer, 1980). In other words, testing for communicative competence by global and/or integrative means, while testing for linguistic competence by a discret point approach, might have turned the study in the direction of determining whether differences between linguistic competence and communicative competence are the results of trait or method. Communicative competence tests developed for this study were therefore based primarily on a discrete item approach (though responses made by students on each communicative competence test were also evaluated on one simple global rating scale).

The **Active Communicative Competence** (ACC) test developed and administered in 1980 had one section that tested the ability to convey information concerning simple line drawings so that they could be reconstructed by another person. For scoring purposes, a content analysis of the pictures was undertaken and each bit of essential information was allotted one point. On that basis, three pictures—(1) sun, rainbow, and a cloud; (2) two apples falling from a tree; and (3) a bird on top of a ball situated on a book—furnished 59 discrete items. Another eight items were based on the ability to give map directions that would get a listener from one point on a map to another. Extending an invitation to a birthday party (time, place, activities indicated by picture) was analyzed into five items, while reporting an accident (as shown on a picture) was utilized for six discrete items of information. Thus, the maximum score for the ACC was 78. Since the map direction task was not included in elementary school administration, the elementary version of the ACC had only 70 items.

A **Receptive Communicative Competence Test** (RCC) was constructed primarily to evaluate the ability to understand and follow directions. Its first part tested for ability to fill out a "computer form" (filling in last name, initials, date of birth, age, etc.). The second part consisted of following instructions on a street map: At the end of each series of instructions students tested identify (on the map) the building to which they were led by the instructions. The third part of the RCC consisted of performing requested operations (like underlining names starting with capital letters, circling words between commas) on a printed paragraph. The total number of items on the RCC was 22 (10 + 5 + 7). However, at the elementary school level the map direction part was not administered. Thus, the maximum score for the RCC at the elementary level was 17, rather than 22.

Another passive-receptive discrete point test of communicative ability (developed primarily by Arnulfo G. Ramírez) dealt with students' ability to recognize the meaning of specific teachers' or pupils' speech acts performed in the classroom. This **Sociolinguistic Competence Test** (SoLC) consisted of 20 items. The stem of each item described briefly a specific classroom situation and a speech intent. Students were then asked to choose which two out of four possible statements would accomplish the intended purpose: for example, Jane wants the teacher to know that she did not write on the wall. Kathy did it. What are the two ways that Jane would say this: (a) Don't blame me, talk to Kathy. (b) I want Kathy to know what she did. (c) Kathy did it, not me. (d) I didn't write to Kathy. The two correct choices were always a covert (a) or a very overt (c) way of performing the intended speech act. The 20-item test thus furnishes two sets of scores (20 maximum for overt and 20 maximum for covert responses). The expectation was that the covert speech acts might be a bit more difficult to recognize than the overt.

All three tests produced in 1980 were replicated in Spanish translation (which proved to be an especially difficult task for the SoLC because verbatim translation of English speech acts, especially "covert" ones, was not always possible). Spanish versions of the tests will be referred to as SACC, SRCC, and SSoLC, as opposed to the English versions (EACC, ERCC, and SoLC).

Modification of the Communicative Competence Measures: 1981

In the second year of research there was continued experimentation with, and modification of, some of the communicative competence tests. The ERCC and SRCC tests turned out to be relatively unproblematic and easy to administer so they were kept in their original forms. Administration of the speech act recognition of sociolinguistic competence tests (SoLC, SSoLC) had shown that the tests were not only relatively easy for most subjects but that there were only very small differences between the overt and covert scores produced by the tests. Arnulfo G. Ramírez undertook a revision of the tests, involving primarily the splitting of the test into overt and covert speech act items, each involving one choice out of four (rather than two choices out of four). Thus, the 20-item test became a 40-item instrument (still giving a possible 20-item covert and 20-item overt speech act recognition score).

A major revision was undertaken in the ACC tests. The 1980 version, although very reliable, was rather lengthy (and probably unnecessarily so). Since the description part of the test was dominant over all others (59 items of 78), correlations between this part and the test as a whole were high (0.85-0.90) indicating that the other part of the test contributed little to the total score. Correlations between the smaller sections and the descrip-

tive part were also in the 0.80 range. Evidently the same ability of organizing and conveying information was tapped in all sections of the test. Thus, the decision was made to concentrate the ACC testing on the description of a single picture. The picture utilized for most of the gathering of ACC data in 1981 and 1982 was that of a pupil in a classroom holding a baseball bat, standing in front of a baseball and being interrogated or blamed by an adult who is pointing at a broken window. The method used in 1980 was again applied to the descriptive analysis of the picture: 18 items deemed essential for the description of the location and persons were singled out as furnishing the basic descriptive score. Five items were thought essential for the description of the action surrounding the events (e.g., boy played ball, he or someone threw the ball, the ball broke the window, etc.), and four items related to speech acts probably performed in the interaction of the adult and the pupil. Thus, the total "basic score" to be achieved in the picture descriptions was 27 (descriptive score: 18, event score: 5, speech act score: 4). Trial administration of the test showed that additional legitimate information not provided for by the items furnished by our content analysis could be produced by the test taker. These items were counted as part of the total test scores under the rubric of supplementary descriptive, supplementary events, and supplementary speech act score.

The picture chosen for the ACC test was a school-related setting. In order to test the relative competence of English and Spanish in a home setting as well as in a school environment ("school domain" vs. "home domain," see Fishman et al., 1971), a test based not on a parallel scoring system but on a home domain-related setting was also developed. Eventually, also another set of pictures was developed, one related to a home and one to

a school setting. The other school setting picture showed a boy and girl quarreling about access to an easel in a school art class. The home domain pictures show: (1) a child telling his mother (who is on the phone) about a skirt burning on an ironing board, and (2) an adult (probably the father) admonishing a girl to pick up her somewhat disorderly room.

The 1980 ACC test thus exists in four versions: home domain I and II (HDI, HDII) and school domain I and II (SDI, SDII). All four versions can, of course, be administered in English or Spanish (e.g., EACC HDI, SACC HDI, etc.). Actually, all versions were administered in both languages in only one school (JHS 81). In another school (HS 80) two versions of the test (SDI and HDI) were administered in both languages. In junior high school the intercorrelations between the four different versions of the tests (SDI, SDII, HDI, HDII) ranged from 0.91 to 0.93. Because of these very high correlations among the tests as well as time constraints, it seemed inadvisable to administer all the tests on all possible occasions or to include more than one version of the tests (namely, EACC SDI and SACC SDI) in the major analysis to be presented.

All the communicative competence measures used in this study were undoubtedly heavily mainstream American-school related, but communicative competence is, by the very essence of whatever definition may be used, a context dependent measure--and the context of the United States school seemed the most relevant for the purposes of this study.

Reliability of Language Measures

The remainder of this study is, in a sense, devoted to the question of validity of the language measures. However, a few specific comments must be devoted to their reliability.

For most of the measures used, a consistency measure, namely, Cronbach's α, was utilized to establish reliability. Appendix A gives means, standard deviations (broken down by test administration in school and sex) as well as coefficients for individual test administration. It will be noted that in 1980 the coefficient was calculated for a population including HS 80, EL1, and EL4 80, while in all the other cases the reliability coefficient was determined for each individual school.

As can be seen from Appendix A, the reliabilities of the English and Spanish version of the linguistic competence test used (**BOLT**) were satisfactory and, almost without exceptions, very high (ranging from a high of 0.97 to a low of 0.63).

The establishment of the reliability of the English and Spanish **Active Communicative Competence** tests (**ACC**) was also based on calculation of the α coefficient. The use of the coefficient is meant to furnish only a rough reliability estimate and is, in many ways, problematic. While all the 1980 and most of the 1981-1982 **ACC** tests are based on discrete items, it can hardly be claimed that the items are independent from each other: Groups of items are derived from the same task or the same picture, a fact that would tend to inflate the α values. Another problem was created by the open-endedness of a supplementary scoring system adapted in the 1980-1981 versions of the **EACC** and **SACC**. The supplementary scores in description, events, and speech acts could range from 0 to a potentially large number (typically 1 or 2, but sometimes as high as 9). The supplementary scores were a discrete part of the test--but not discrete test items. In order to include them in the reliability estimate, the following procedure was followed: first the correlations between supplementary scores for description, events, and speech acts, and the rest of the test were calculated for test

administration HS 81 and EL2 81. The correlations ranged from 0.22 to 0.46, indicating that the supplementary score did not measure any ability not related to the main portion of the test and made some independent contribution to the total score. The reliability of the total test was calculated by establishing a α coefficient in which the three supplemental scores were simply treated as individual test items (even though they often contributed more than just one point to the total score).

The calculation of the reliability of the RCC tests is also subject to the caution concerning item interdependency, but at least it is mathematically not problematic. As can be seen from Appendices B and C, reliability for the ERCC and SRCC tests range from high (0.92) to at least satisfactory (0.63).

Another set of objective tests produced for the project were the English and Spanish SoLC tests. As can be seen from Appendix D, only in 1980 were the tests administered in both the Spanish and English versions. The revised 1981 form of the test was administered only in its English version and only in one school, JHS 81. The reasons were partly time constraints and partly the difficulty of interpreting the scores of the SoLC test. As Appendix A shows, only slight consistent differences exist between the overt and covert scores. It is impossible to determine whether failure to perform on an item is due to misunderstanding the situational description or misunderstanding the speech act required by it. For some test administrations—not only in the English dominant EL3 80 where a near perfect English score would be expected—at least the English version of the test is subject to a very pronounced ceiling effect. This ceiling effect, in turn, may be responsible for some of the very high reliabilities.

For two of the language measures used, the question of scorer reliability had also needed consideration. While the linguistic competence, SoLC, and RCC tests are totally objective, the discrete scoring of the ACC-tests allows for some personal or subjective interpretation. The objectivity of the scoring should ideally have been addressed item by item. However, the decision was taken to simply investigate whether differences between scorers produced significant variation between total objective tests scores; in fact, it did not. Pearson correlations between total scores of four scorers on the EACC 80 ranged from 0.90 to 0.95 (N=10) and the correlation between two scorers SACC 80 was 0.89 (N=10). The 1981 versions of the ACC introduced supplementary scoring and with it the possibility of greater interscorer variance. However, the correlations between total and even subscores of the scorer remained high. For four scorer's scoring 12 EACC test correlations for total scores ranged from 0.96 to 0.90, and correlations on scores of sections of the test had similar ranges (e.g., 0.99 on descriptive supplemental scores) with a correlation of 0.95 on speech act scores being the lowest. For the 1981-1982 version of SACC correlations of two scorers for the test on a sample of ten tests ranged from 0.82 to 0.85 on subsections, and the correlation for the test as a whole was 0.86.

During all administrations of the ACC tests, student responses were tape recorded. Scoring was on the tape recorded responses rather than during the examination itself. To compare the results of different scoring systems, student responses on the tests were also evaluated by a rating scale. Initially we experimented with a multitrait rating scale of the type used in the Foreign Service Interview tests (e.g., Jones, 1979). The correlations between the various traits (e.g., pronunciation, vocabulary, grammar) were very high, perhaps because of the difficulty in separating the constructs or

traits rated (Yorozuya and Oller, 1980). However, it seemed extremely difficult to establish interrater reliabilities for the rating of the specific traits, possibly due to the responses elicited on the ACC test which contains much vocabulary but sometimes included prolonged stretches of natural discourse. For this reason it was decided to use only one global rating (GLR). Interrater agreements for the GLR ranged from 0.90 to 0.95 (4 raters, 12 subjects) on the evaluation of responses on the EACC and were 0.86 for two raters of the SACC (2 raters, 12 subjects).

INTERRELATIONS OF LANGUAGE TESTS, RELATIONS TO GLOBAL RATINGS, AND ACHIEVEMENT

Relations of Linguistic to Communicative Competence Within the Same Language

To establish the relation between linguistic and communicative competence measures, Pearson correlations between linguistic competence and the other language tests administered (ACC, RCC, SoLC overt and SoLC covert) were calculated. The results of these calculations are summarized in Tables 1 and 2. The correlation between linguistic competence and the other tests tends to be generally quite high--as indeed one would expect them to be. Even without advancing any assumption or arguments concerning the "unitary factory hypothesis" (see Oller, 1981), one could assume that linguistic communication skills are in some way tied to linguistic competence. The real problem lies not in establishing the relationship, but in its nature. From this point of view the instances in which linguistic competence and various forms of communicative competence are weakly or in a non-significant relation as measured by ACC, RCC, or SoLC) turn out to be more interesting than the highly significant correlations.

Table 1

CORRELATIONS OF ENGLISH LINGUISTIC COMPETENCE (ELC)
WITH OTHER ENGLISH LANGUAGE TESTS

School	LC/ACC	LC/RCC	LC/SoLC Overt	LC/SoLC Covert
HS 80	0.67***	0.78***	0.61***	0.67***
HS 81	0.69***	0.94***	—	—
HS 82	0.90***	0.90***	—	—
JHS 81	0.71***	0.70**	—	—
JHS 82	0.56***	0.43**	—	—
EL1 80	0.27	0.62**	0.34	0.24
EL2 81	0.55*	-0.15	—	—
EL3 80	0.19	-0.12	0.01	0.02
EL4 80	—	0.12	0.43*	0.31*

Table 2

CORRELATIONS OF SPANISH LINGUISTIC COMPETENCE (SLC)
WITH OTHER SPANISH LANGUAGE TESTS

School	LC/ACC	LC/RCC	LC/SoLC Overt	LC/SoLC Covert
HS 80	0.17	0.12	0.34*	0.20
HS 81	0.59***	0.59***	—	—
HS 82	0.30	0.38*	—	—
JHS 81	0.29	0.27*	—	—
JHS 82	0.74***	0.15	—	—
EL1 80	0.64***	0.43**	0.57**	0.74**
EL2 81	0.65***	0.59***	—	—
EL3 80	—	—	—	—
EL4 80	—	-0.31*	-0.12	0.11

Notes: * = $p < .05$
** = $p < .01$
*** = $p < .001$

LC = Linguistic Competence
ACC = Active Communicative Competence
RCC = Receptive Communicative Competence
SoLC = Sociolinguistic Competence

A look at the standard deviations of the EACC in Appendix A shows a range of 13.70 to 7.31. For the SACC the corresponding range is 16.48 to 7.38. Evidently there seems to be a broad range of variance in EACC and SACC for all the schools. A look at the standard deviations of linguistic competence tells a different story. The range of standard deviations for the English linguistic competence (ELC) is 1.28 to 7.66. The corresponding range for Spanish linguistic competence (SLC) is 1.84 to 5.61. The school in which the standard deviation for ELC is the lowest is—not unexpectedly—the heavily English-dominant EL3 80 in which most pupils achieve at the very top of the BOLT (ELC) test. In spite of considerable variance in communicative competence, uniformly high linguistic competence makes any significant correlation of linguistic/communicative competence impossible. The lowest SACC standard deviation is found in HS 82. Again, no significant correlation between SLC and SACC appears, in spite of considerable variance in SACC.

Looking at the school with high variance in ELC and SLC we find high correlations between linguistic competence/ACC. As shown in Table 1, the maximum standard deviation in ELC occurs in HS 82, which also has the highest ELC/EACC correlation of 0.90. The standard deviation "leader" for SLC is EL3 80, in which only a few students thought their Spanish was good enough to take the SACC and SLC tests and for which SLC/SACC correlations were not computed. The next highest is JHS 82 with a standard deviation of 5.33. As shown in Table 2, JHS 82 has also the highest correlation of SLC/SACC, 0.74.

As far as the other tests of communicative competence are concerned, variance in linguistic competence seems, again, to be a reasonably good prediction for the presence of significant correlations, though for both RCC

and SoLC the relations with linguistic competence are less uniform than for the ACC test. In at least one case (EL4 80) there is even a negative relation (-0.31*) between SLC and SRCC, as shown in Table 2. The most plausible reason for this relation is that the RCC content (filling out a form, etc.) is very heavily school ("Anglo") culture loaded. Greater SLC is, at least in the environment of EL4 80, associated with less knowledge of the "Anglo" school culture and thus with lower performance on the SRCC test. Similar influences (heavy loading with "mainstream" American school context) are present also in the SoLC tests. At any rate, a factor of familiarity with American school contexts enters into all the communicative competence measures used and has undoubtedly some influence on the scores of all the communicative competence measures used in this study.

The basic relation between linguistic competence and various communicative competence measures (which was also verified by scatterplots) which emerges from this discussion is simply this: A wide range of communicative competence is possible at various and even advanced levels of linguistic competence. However, at low levels of linguistic competence, it is difficult to attain any meaningful communicative competence. Thus, when measured in any group that included individuals of low linguistic competence, linguistic competence and communicative competence will tend to show very high and significant correlations.

Relations of Language Test Across Languages and the Measurement of Language Balance

In addition to investigating linguistic competence and communicative competence relations within the same language, we also examined correlations between performance on parallel tests in English and Spanish. In other words, what evidence is there within our data, for a common, shared profi-

ciency in the two languages of bilingual children (e.g., see Cummins, 1979, 1981b, 1981c). The correlations shown on Table 3 do not give a clear and unambiguous answer.

As far as linguistic competence is concerned, the English language data show some positive relations between SLC and ELC. For the JHS and HS level the correlations tend to be negative. There may indeed be an underlying common basis for linguistic competence in English and Spanish, but, at least for the high school and junior high school levels, test scores are predominantly influenced by the opportunity to learn English (or forget Spanish) which, in turn, is related to time spent in the United States. Thus, English linguistic competence and Spanish linguistic competence tend to show few or negative relations.

For the communicative competence scores, the correlations of Table 3 are even more difficult to interpret, since they are influenced by cultural knowledge and familiarity with the task even to a greater extent than the linguistic competence scores. Positive correlations between English and Spanish communicative competence scores (especially those that occur in spite of low or negative correlations in linguistic competence) are undoubtedly interpreted best as results of degrees of acculturation or task familiarity reflected in both the Spanish and English tests.

That the communicative competence measures used in this study are by their very nature heavily "mainstream" becomes evident also from a brief comparison of "language balance" as determined by communicative competence as opposed to linguistic competence measures. Table 4 shows the percentage of Spanish-dominant students as determined by the linguistic competence and communicative competence tests. For the purpose of this calculation, Spanish dominant is defined as the Spanish score exceeding the English score in a

Table 3

CORRELATIONS OF ENGLISH AND SPANISH LANGUAGE TESTS

School	LC	ACC	RCC	SoLC Overt	SoLC Covert
HS 80	-0.22	0.51***	0.14	-0.07	-0.16
HS 81	-0.23	0.30	0.07	—	—
HS 82	0.04	0.41*	0.30*	—	—
JHS 81	0.21	-0.18	0.42*	—	—
JHS 82	0.42*	-0.11	-0.02	—	—
EL1 80	0.24	0.45*	0.17	0.28	0.56**
EL2 81	0.55**	0.09	0.30	—	—
EL3 81	—	—	0.05	0.55*	0.29
ELA 80	0.01	—	0.58***	0.79***	0.81***

Notes: * = $p < .05$
** = $p < .01$
*** = $p < .001$

LC = Linguistic Competence
ACC = Active Communicative Competence
RCC = Receptive Communicative Competence
SoLC = Sociolinguistic Competence

Table 4

PERCENTAGE* OF SPANISH-DOMINANT STUDENTS
(SPANISH TEST SCORE > ENGLISH SCORE) ACCORDING
TO LINGUISTIC AND COMMUNICATIVE COMPETENCE PICTURE TESTS

	LC		ACC		RCC	
School	N	% of Spanish Dominance	N	% of Spanish Dominance	N	% of Spanish Dominance
HS 80	45	71	36	36	30	10
HS 81	27	59	25	35	31	29
HS 82	36	81	35	57	37	68
JHS 81	17	59	25	44	24	58
JHS 82	25	64	24	25	27	27
EL1 80	23	22	24	34	29	17
EL2 81	28	54	21	41	29	28
EL3 80	insufficient data		—	—	—	—
EL4 80	28	46	—	—	28	21

*Decimals .5 or larger are calculated as 1 percent.

pair of parallel tests. (Order of test administration for any pair of tests was balanced so that the overall results of Spanish/English comparisons would not be affected by it. A check in the effects of administration sequence showed that it was consistent in the expected direction but not statistically so.) The comparison of the linguistic competence and communicative competence balances (as measured by ACC and RCC in Table 4) shows that with one exception (in EL1 80 where linguistic competence Spanish dominance is 22 percent and ACC Spanish dominance is 34 percent) Spanish dominance is much higher when measured by linguistic competence rather than by either ACC or RCC. The magnitude of the differences is especially striking at the high school and junior high school levels.

The reason for these differences is quite obvious. The linguistic competence test measures the ability to use correct grammar, an ability one would expect for subjects of this study who have lived in the United States for many years, some of them all their lives. Yet attrition of grammaticality in the primary language may never occur at all or is, at any rate, a relatively slow process. The relative superiority of grammar scores in the primary language does not necessarily reflect a superior ability to communicate—especially if the communication refers to daily life contexts largely associated with the culture and vocabulary of the second language.

Global Ratings and Linguistic and Communicative Competence

The suggestion that at least the communicative competence tests are measuring several traits (e.g., linguistic competence, cultural knowledge, knowledge of specific vocabulary, and organizing ability) leads to yet another question: Which of the tests of the linguistic competence or the communicative competence battery are most heavily reflected in the global rating (assigned on the basis of the responses from the ACC tests)?

The correlation of the ratings of both language tests are summarized in Table 5 for all the schools in which the ratings were undertaken and in which they were possible (ACC was not administered in EL4 80 and in EL3 80 very few students took the Spanish tests). Most of the correlations between ratings and tests are significant and, in some cases, extremely high. The absence of any significant correlation in EL1 80 also gives a very good idea as to what constitutes the main influence on the magnitude of the correlation. As noted previously, EL1 80 and EL3 80 show the minimum variance (and relatively high scores) in English linguistic competence. The greater variance in linguistic competence, the greater correlations between language tests and ratings. Maximum correlations between ratings and language tests are found in the English performance of HS 82, which also has the highest standard deviation for any English linguistic competence test (see Appendix E). In most cases the correlations between ratings and language tests are highest for linguistic competence (even though the ratings themselves are based on responses in ACC). In other words, the variance in linguistic competence and linguistic competence itself seem to be the major determinants of what is measured in the global rating scale evaluation.

Language Tests and Scholastic Achievement

The question of the relation of language test scores to scholastic achievement is of obvious interest. It is, after all, the latter which, as far as students, parents, and teachers are concerned, is likely to be the ultimate criterion of predictive as well as concurrent validity.

The scholastic achievement measures that cooperating schools made available for the purpose of this study were of three types:

1. The number of competencies passed by individual students. These competencies refer to specific tests or subtests that must be passed to ful-

Table 5

CORRELATIONS OF GLOBAL RATINGS WITH LINGUISTIC AND COMMUNICATIVE COMPETENCE IN ENGLISH AND SPANISH

	Test					
School	ELC	EACC	ERCC	SLC	SACC	SRCC
HS 80	0.74**	0.54**	0.39	—	—	—
HS 81	0.84***	0.32*	0.80***	0.84***	0.73***	0.67***
HS 82	0.93**	0.96***	0.91***	0.50***	0.41*	0.17
JHS 81	0.92***	0.88***	0.87***	0.43*	0.81***	0.30*
JHS 82	0.91***	0.59***	0.47**	0.88***	0.83***	0.39*
EL1 80	-0.05	-0.07	0.06	—	—	—
EL2 81	0.61***	0.59**	0.08	0.34*	0.55**	0.11

* = $p < .05$
** = $p < .01$
*** = $p < .001$

fill graduation requirements (high school level) or that can be used as "performance indicators" to determine whether pupils are likely to have problems in ultimately passing a specific graduation requirement (junior high school, elementary level).

2. Specific competency scores in reading, writing, and mathematics achieved on the tests used for graduation certification (or as indicators of satisfactory achievement likely to lead to graduation).

3. Scores on nationally normed tests (reported by grade level equivalence) that are widely used to measure relative progress of pupils (and schools and school districts) on certain basic skills, especially reading, language use, and math. The tests used as achievement measures in this study were either the **California Achievement Test (CAT)** (EL4 80) or the **Comprehensive Tests of Basic Skills (CTBS)**, (HS 82, JHS 82, EL1 80, EL3 80, EL4 80). (For additional references and more information on these widely used tests, see Buros, 1978.)

The correlations between all the language tests administered and all the scholastic achievement measures available are shown on Table 6. In general, the time of administration of the language tests preceded the administration of the achievement tests by an interval of two to six months. At least for the English tests, the correlations with the achievement test can, therefore, be interpreted as indicative of predictive validity.

The general picture emerging from the correlations can be summarized as follows:

1. ELC (as measured by the **BOLT** test) is heavily involved in all achievement measures (in HS 82 even in the **CTBS** reading administered in Spanish) with the exception of some math achievement scores (HS 82: **CTBS** math administered in Spanish, JHS 82: Math Composition and Math **CTBS**) and the achievement measures of EL3 80 and EL4 80. At least for EL3 80 the lack of correlations between achievement and English linguistic competence is, of course, easily explained by the ceiling effect and relative lack of variance in the latter.

2. EACC also correlates highly with most achievement measures (except with math tests and some **CTBS** scores in JHS 82). In EL3 80 where English linguistic competence could not account for variance in achievement, EACC relates significantly to the directly language-related **CAT** scores.

3. ERCC, which is probably the most highly school context related test, correlates significantly with all achievement measures, including math, with the exceptions of two **CTBS** scores in EL2 81 and the **CAT** scores in EL3 80. EL2 81 and EL3 80 also have the least variance in

Table 6

CORRELATION OF LANGUAGE TESTS WITH SCHOLASTIC ACHIEVEMENT

School	Achievement Measure	ELC	EACC	ERCC	ESoLC Overt	ESoLC Covert	SLC	SACC	SRCC	SSoLC Overt	SSoLC Covert
HS 80	N of Competencies	0.42*	0.36*	0.38*	-0.13	0.05	-0.23	0.3?*	0.23	-0.01	0.04
HS 81	N of Competencies	0.38*	0.40*	0.60***	—	—	-0.32*	0.08	-0.07	—	—
HS 82	Writing Competency	0.80***	0.59**	0.76***	—	—	0.08	0.07	0.12	—	—
	Math Competency	0.38*	0.28	0.61**	—	—	0.40*	0.02	0.08	—	—
	Reading Competency	0.75**	0.45*	0.70***	—	—	-0.22	-0.02	0.33	—	—
	CTBS Reading (Spanish)[1]	0.36*	0.25	0.42*	—	—	0.26	0.13	0.62***	—	—
	CTBS Math (Spanish)[1]	0.27	0.06	0.43*	—	—	0.10	0.11	0.40**	—	—
JHS 81	N of Competencies Passed	0.57**	0.76***	0.88***	0.41*	0.54**	0.25	0.02	0.29	—	—
JHS 82	Language Use Competency	0.51**	0.49**	0.56**	—	—	-0.18	0.14	0.45**	—	—
	Math Competency	0.31	0.23	0.54**	—	—	-0.25	-0.13	0.37*	—	—
	Reading Competency	0.66***	0.27	0.55**	—	—	0.45*	-0.14	0.28	—	—
	CTBS Reading	0.50**	0.18	0.65***	—	—	-0.42*	-0.19	0.49**	—	—
	CTBS Language	0.55**	0.04	0.57**	—	—	0.53**	0.35	0.37*	—	—
	CTBS Math	0.06	-0.04	0.51**	—	—	-0.11	0.21	0.49**	—	—

* = $p < .05$
** = $p < .01$
*** = $p < .001$

[1]CTBS Reading and CTBS Math were administered in Spanish.

Table 6 (continued)

School	Achievement Measure	ELC	EACC	ERCC	ESoLC Overt	ESoLC Covert	SLC	SACC	SRCC	SSoLC Overt	SSoLC Covert
EL1 80	CTBS Reading	0.42*	0.59**	0.65**	0.58*	0.65**	0.20	0.16	0.40	0.46*	0.50*
	CTBS Language	0.43*	0.89***	0.50*	0.65**	0.51*	0.01	0.04	0.34	0.29	0.38
	CTBS Math	0.53**	0.65**	0.64**	0.41*	0.60**	0.24	0.20	0.21	0.52**	0.51**
EL2 81	CTBS Reading	0.53**	0.50**	0.14	—	—	0.03	0.18	0.49**	—	—
	CTBS Language	0.48**	0.59***	0.13	—	—	0.04	-0.02	0.27	—	—
	CTBS Math	0.31*	0.35*	0.49**	—	—	0.20	0.28	0.50**	—	—
	N of Competencies Passed	0.39*	0.64***	0.33*	—	—	-0.06	0.12	0.51**	—	—
EL3 80	CAT Vocabulary	0.21	0.39*	-0.01	0.25	0.06	—	—	0.23	0.40	0.43
	CAT Reading	0.24	0.54**	0.04	0.35	0.23	—	—	0.15	0.54*	0.63**
	CAT Spelling	-0.01	0.01	0.16	0.32	0.24	—	—	0.27	0.59*	0.19
	CAT Language Mechanics	-0.08	0.33*	0.08	0.47*	0.43*	—	—	0.27	0.24	-0.10
	CAT Expression	0.21	0.46**	0.02	0.40*	0.27	—	—	0.32	0.49*	0.34
	CAT Math Competency	0.25	0.11	0.33	0.44*	0.42*	—	—	0.43*	0.33	0.23
	CAT Math Concepts	-0.05	0.19	0.21	0.55**	0.49	—	—	0.21	0.34	0.37
	CAT Reference Skills	0.22	0.32*	0.14	0.44*	0.45*	—	—	0.44*	0.54*	-0.03
EL4 80	CTBS Reading	0.11	—	0.33*	0.41*	0.31	0.32	—	0.42*	0.46*	0.32

ERCC scores (see Appendix B), thus, the lack of significant correlations.

4. Spanish linguistic competence has either no significant correlations and, in a few instances, some significantly negative correlations with achievement measures, (e.g., HS 81 number of competencies, HS 82 math, JHS 82 competency in reading, CTBS Reading and CTBS Language). The negative correlations can be easily explained. The students who are the latest arrivals in the United States and who are learning English have the highest Spanish linguistic competence skills, while some of the students whose English is strong are in junior high school or high school bilingual classes specifically to refurbish or maintain their Spanish skills. Their Spanish linguistic competence is not as high as those of the recent arrivals. This results in a negative correlation between Spanish linguistic competence and the highly English linguistic competence related achievement measures. It is also interesting and important to point out that none of the negative correlations between Spanish linguistic competence and achievement appear on the English linguistic level where, at least in the schools investigated, "recuperation" of Spanish skills is never a reason for placement in or election of a bilingual program.

5. Except for one instance (number of competencies in HS 80) SACC shows no significant relation to any of the achievement measures. The cultural mainstream type context of the measure may just be strong enough to cancel out the effects of recency of information that accounts for the negative relations of Spanish linguistic competence to achievement.

6. SRCC shows various strong correlations with achievement measures—not only to the CTBS tests in HS 82, administered in Spanish, but also to a variety of achievement tests in JHS 82, EL2 81, EL3 80, and EL4 80. In the absence of any significant correlation of Spanish linguistic competence to achievement, these significant correlations must be interpreted as not due to the linguistic element, but to the "school, Anglo-middle class" context which is present in the RCC (i.e., filling out forms, following directions, etc.).

7. In HS 80 the English SoLC tests show no correlation with achievement, perhaps because of a ceiling effect and lack of variance (see Appendix A). Whenever there are significant correlations between achievement and SoLC tests, and both the English and Spanish tests were administered (EL1 80, EL3 80, EL4 80), these significant correlations appear for English SoLC as well as Spanish SoLC. The conclusions suggest that the portion of variance in the SoLC measures that relates to achievement has little to do with language *per se* but with some other kind of ability. Since the SoLC measures are orally administered multiple-choice tests, this may be the ability to retain four possible choices in short-term memory or perhaps the ability to reconstruct and picture oneself in the classroom situation described in the stem of the tests.

One problem involved in interpreting the correlation of language to scholastic achievement is, of course, the one inherent in the interpretation of any correlation: Does the correlation exist because of a direct inherent relationship or is it due to a third variable influencing those that are being correlated? To what extent are correlations between achievement and linguistic competence or communicative competence caused by linguistic competence and communicative competence requirement inherent in the achievement task and to what extent are they due to abilities required by the scholastic achievement? As was noted in the discussion of Table 6, linguistic competence in the primary language has no relation to achievement. With the exception of the CTBS in HS 82, it is not directly involved in the tests, nor does the variance in Spanish linguistic competence seem to have any relation to any ability involved in the achievement tests perhaps because the primary language is naturally "acquired" rather than "learned" (see Krashen, 1981). With a second language, in this case English, the issue becomes more complicated. English linguistic competence, EACC, and ERCC are not only obviously and directly involved in the English achievement measures, but the learning of a second language may in itself constitute or at least involve a "scholastic achievement." Especially in the case of a second language being learned rather than acquired, linguistic competence or communicative competence in that language may predict scholastic achievement even if there is no direct involvement of the language in any of the achievement measures. For English-speaking students, there are significant correlations between achievement in foreign language, e.g., French and general scholastic achievement (see Pimsleur et al., 1963).

In the case of the correlations between English communicative competence and linguistic competence on the one hand and achievement measures on the

other, it is extremely difficult to decide to what extent the correlations are due to a general ability factor. While it is easy enough to speculate that the magnitude of this general ability factor depends on the degree to which English has been "learned" rather than "acquired," it is not really possible to determine (at least on the basis of the data available and examined so far) to what extent any English language test score reflects "learning" rather than "acquisition." For the most part, English linguistic competence, EACC, and ERCC form a tightly related group of variables that, in turn, make a contribution to achievement that is largely, but not exclusively, related to the overlap among the tests.

It has been suggested (chiefly by Cummins, 1981a, 1981b) that tests used for evaluation or placement in bilingual programs should reflect cognitive/academic language proficiency (CALP) rather than basic interpersonal communicative skills (BICS) because it is the former that relates to criteria of scholastic success. This advice has undoubtedly much merit, though, as was noted above, the amount of CALP rather than BICS measured by any test will depend not only on the tests but also on stages and manner of acquisition (or rather learning as opposed to acquisition). At any rate, the English linguistic competence, EACC, and ERCC tests appear to reflect CALP rather than BICS to considerable and probably equal extent.

THE RELATION OF MOTIVATION TO LANGUAGE TESTS AND SCHOLASTIC ACHIEVEMENT

The role of motivation in the outcomes of foreign or second language learning has been a subject of continuing interest for several decades (Gardner and Lambert, 1959, 1972). Recently, the subject has also become highly controversial.

The controversy arose primarily from a suggestion made by Oller and associates (Oller, 1977; Oller and Perkins, 1978; Oller, 1981, 1982) that self-report instruments of affective variables may be influenced by factors like language knowledge and general intelligence and may thus bring about spurious correlations of constructs like attitudes and motivation to achievement in second language. Oller's suggestions have, in turn, been either rejected or critically examined by others (Gardner et al., 1977; Genesee, 1978; Upshur et al., 1978; Tucker, 1981; Gardner, 1980; Gardner and Gliksman, 1982). The matter of the validity of the self-report instruments is far from resolved, though there is some consensus (Oller, 1981; Tucker, 1981) that measurement of affective variables is a complicated enterprise and in dire need of improvement. This measurement improvement is not one of this study's goals, however, we felt that an investigation of the possible differential relations of affective variables to linguistic competence could make some contribution to the validity of measurement controversy.

Motivation has traditionally (see Gardner and Lambert, 1972) been divided into the instrumental vs. the integrative types: the latter refers to a desire to acculturate or associate with the speakers of the second language; the former constitutes a desire to learn the language for the purely personal (usually economic) advantages to be gained. Whether such motivations would have differential effects on the different types of language competencies seemed a logical and interesting question.

The motivation measure used in this study was adapted from a questionnaire utilized in a recent dissertation (Torres, 1982). It consisted of six reasons for learning English and six for learning Spanish. Of the six reasons for learning either language, three were instrumental and three were integrative. Students were asked to indicate their degree of agreement with

each reason on a 1 to 4 scale. Intercorrelations for the three instrumental and three integrative reasons for learning each language ranged from 0.20 to 0.55, indicating that the items were measuring related but not necessarily identical reactions. Unfortunately, motivation measures were administered only in 1982 and at the high school and junior high school levels. Means and standard deviations for the motivation measure are shown in Appendix F. Mean scores range from 11 to 9.36. Since 12 is the maximum score possible, most reasons for either learning English or learning (or preserving) Spanish were evidently considered as relatively important.

The correlations between motivation and language test measures as well as global language ratings (based on ACC) are shown in Table 7. Even before attempting an interpretation of these correlations, one has to keep in mind that the relation between language competencies and motivation in the student body of a bilingual education program cannot be comparable to the one that might exist in groups studying a second language from about the same starting point for all group members. The student body of the bilingual programs studied in this report consists of students who have lived all or nearly all their lives in the United States as well as very recent arrivals. Length of stay in the United States has a very strong, perhaps even predominant, influence on language skills, and the relation of motivation to language skills must also be interpreted in that light.

In the high school level in Table 7, correlations of motivation with language tests are almost totally nonsignificant, with the exception of some correlations for Spanish integrative motivation. There the correlations seem at first the reverse of what one would expect. Spanish integrative motivation has a negative relation to Spanish and a positive relation to English. In light of the comments in the preceding paragraph, the solution of the puz-

Table 7

CORRELATIONS OF MOTIVATION WITH LANGUAGE TESTS

HS 82 (N = 25)

	ELC	ERCC	EACC	English Rating	SLC	SRCC	SACC	Spanish Rating
Spanish Integrative	0.29	0.39*	0.27	0.33	-0.25	-0.20	0.05	-0.35*
Spanish Instrumental	0.18	0.32	0.15	0.16	-0.01	0.19	0.13	-0.01
English Integrative	-0.00	0.04	-0.02	-0.07	-0.09	-0.14	0.11	-0.03
English Instrumental	0.10	0.05	0.01	-0.03	-0.01	0.03	0.10	0.14

JHS 82 (N = 11)

	ELC	ERCC	EACC	English Rating	SLC	SRCC	SACC	Spanish Rating
Spanish Integrative	0.44	0.55*	0.22	0.29	0.29	0.40	0.70	0.00
Spanish Instrumental	0.08	0.38	0.17	0.15	-0.31	-0.09	0.19	0.53*
English Integrative	0.35	0.12	0.29	0.37	-0.52*	-0.74**	-0.29	-0.46
English Instrumental	0.80***	0.73**	0.65*	0.68**	-0.07	-0.03	0.06	-0.14

zle is easy. The presence of many English-dominant, fluent English speakers in the program is due to their express desire to maintain or improve their Spanish. Their English is strong, but their Spanish is normally not as strong as that of recent arrivals from Mexico. The result is a negative relation of Spanish integrative motivation to Spanish and a positive relation to English skills.

For JHS 82 the sample of students is unfortunately rather small (N=11). There, too, we find positive relations of Spanish integrative motivation with English language skills, but Spanish instrumental motivation has a positive relation at least to the overall global Spanish rating. English integrative motivation seems to relate not to knowing more English but, rather, less Spanish, while English instrumental motivation has indeed the expected strong relationship to English skills and, as shall be pointed out below, to the implied positive relation to other types of school achievement.

Unfortunately, the analysis of motivation to language skills was undertaken as a kind of afterthought and did not involve a large sample. Yet a pattern of explainable relations between motivation and language skills does emerge from the data and deserves further investigation. At any rate, in light of the different correlations with language tests of the integrative vs. instrumental motivation scales, it seems unlikely that the major portion of the variance in these scales, is in any way related to the desire to conform with expected responses, as has been suggested in some of the recent debates.

The correlation between type of motivation and the scores achieved on graduation requirements or related (junior high school) competence tests are shown on Table 8. No pattern of relationship between motivation and achievement emerges at the high school level. For the junior high school level, the

Table 8

CORRELATIONS OF MOTIVATION WITH SCHOLASTIC ACHIEVEMENT

School	Achievement Measures	Type of Motivation: Spanish Integrative	Spanish Instrumental	English Integrative	English Instrumental
HS 82	Writing Competency	0.44	0.37	0.37	0.06
(N = 13)	Math Competency	-0.04	0.40	0.13	0.15
	Reading Competency	0.02	0.39	0.15	0.20
JHS 82	Language Use Competency	0.68**	0.02	0.03	0.80**
(N = 16)	Math Competency	0.59*	0.48	0.06	0.61*
	Reading Competency	0.79**	0.12	0.19	0.83**

relation of motivation to achievement is clear. The combination of Spanish "integrative" (maintenance) motivation with an English instrumental one is a very strong predictor of scholastic achievement. There may be various reasons for this relation, which also confirms a pattern of motivation/language achievement relations shown by other researchers, e.g., Oller et al., 1977. In a recent study undertaken in the community in which JHS 80 is located, it was found that high integrative Spanish and high instrumental motivations reflect, in fact, the priorities of the Mexican-American community (Torres, 1982). High Spanish integrative and high English instrumental motivations also reflect congruity between the pupils and their home background, in itself a possible positive factor influencing educational outcomes. Or, in line with the suggestion that motivation scores do reflect a general intelligence factor, the combination of wanting to preserve Spanish language and cultural values while at the same time learning English for socio-economic reasons may simply be what makes sense for the Mexican-American community of JHS 82.

The data for JHS 82 seems to show that for the obvious reasons discussed above (maximum knowledge of Spanish exists among the latest arrivals), it is not the **knowledge** of Spanish but the **desire to retain** it that relates positively to scholastic achievement.

THE ROLE OF LENGTH OF RESIDENCE IN THE UNITED STATES

The subjects of this study were all enrolled in bilingual education programs into which they were channeled for a variety of reasons. The majority of the pupils were in the program because they had insufficient English skills to function in mainstream regular courses; some of the students were considered fluent English speakers but were channeled into bilingual educa-

tion (or selected bilingual education) programs to maintain their Spanish skills. Still others, especially at the high school level, were apparently assigned to the programs because it was thought that the programs might help underachieving students of Hispanic background even if the students were not necessarily and obviously Spanish dominant. As a result, the length of residence of the students under consideration in this study varies from 1 month to 21 years and from those recently immigrated to those born in the United States.

Length of residence in the United States having this wide range has an expectedly strong relation to most of the measures reported in this study. The correlation of length of residence with the most important tests and measures used in this study are reported in Table 9. The table includes all test administrations for which it was possible to collect data concerning length of residence (in some instances the question concerning length of residence was considered "too sensitive" and the investigators were advised not to include it in the data collection). As one would expect, length of residence has almost invariably strong positive correlation with all the English language test scores and a tendency to have negative correlation with the Spanish language test scores. This is not surprising considering the fact that some of the students in the program who are attempting to retain or revive Spanish language skills are not likely to perform at the level of the more recent arrivals. This tendency of negative correlation of Spanish language tests with length of residence is most pronounced in Spanish linguistic competence. In the SACC and SRCC scores there is only one significant negative correlation with length of residence. The Spanish linguistic disadvantage associated with length of residence in the United States is

Table 9

CORRELATIONS OF SELECTED VARIABLES WITH LENGTH OF RESIDENCE IN THE UNITED STATES*

(a) Language Tests

School	ELC		EACC		ERCC		SLC	SACC	SRCC
HS 80	0.51**	(0.13)	0.42**	(0.34)	0.24	(0.03)	-0.55**	-0.01	0.20
HS 81	0.64**	(0.38*)	0.67***	(0.60**)	0.63**	(0.39*)	-0.52**	-0.03	-0.25
HS 82	0.79***	(0.01)	0.75***	(0.06)	0.75***	(0.17)	-0.27	0.11	0.05
JHS 81	0.60**	(0.35)	0.73***	(0.25)	0.76***	(0.29)	-0.32	0.03	0.00
JHS 82	0.82***	(0.25)	0.44*	(0.18)	0.28	(0.03)	-0.33*	-0.37*	-0.26
EL2 81	0.48**	(0.40*)	0.45*	(0.48*)	0.06	(0.11)	-0.31*	-0.21	-0.09

(b) Achievement Measures

School	Achievement Measure	Correlation	
HS 80	N of Competencies	0.27	(0.35)
HS 81	N of Competencies	0.60**	(0.52*)
HS 82	Writing Competencies	0.55*	(0.05)
	Math Competency	0.25	(0.09)
	Reading Competency	0.48*	(0.06)
	CTBS Reading (Spanish)	-0.13	—
	CTBS Math (Spanish)	-0.08	—
JHS 81	N of Competencies	0.55**	(0.20)
JHS 82	Language Use Competency	0.39*	(0.17)
	Math Competency	0.28	(0.38*)
	Reading Competency	0.57**	(0.38*)
	CTBS Reading	0.52**	—

*Correlations in parentheses are calculated without inclusion of the first four years of residence.

Table 9 (continued)

	CTBS Language	0.53**	—
	CTBS Math	0.20	—
EL2 81	CTBS Reading	0.45*	(0.48*)
	CTBS Language	0.47*	(0.51*)
	CTBS Math	0.30	(0.35*)
	N of Competencies	0.27	(0.38*)

(c) Motivation Tests

	Type of Motivation			
School	Span. Integrative	Span. Instrumental	Eng. Integrative	Eng. Instrumental
HS 82	0.27	-0.04	0.10	0.10
JHS 82	0.26	0.02	0.57*	0.47
JHS & HS 82	0.35*	0.08	0.11	0.21

partly offset by the greater ability to deal with the school context (United States mainstream) oriented content of the test.

The correlation of length of residence with various achievement scores also tends to be as expected and is in most cases significantly positive. The CTBS reading and math tests in HS 82 (which were administered in Spanish) have no correlation with length of residence and some correlations between total numbers of competencies gained or (English administered) math tests do not reach significant levels. In other words, the data suggest that the significant correlations between achievement measures and length of residence are largely, if not exclusively, related to language problems.

Motivation data (collected only in a sample of students in the JHS 82 and HS 82 administration) are correlated with length of residence in Table 9(c). There appears a slight tendency for English integrative motivation to increase with length of residence (perhaps this kind of motivation suffers from the initial culture shock). "Spanish integrative" motivation also tends to increase with length of residence (perhaps this kind of motivation suffers from the initial culture shock). "Spanish integrative" motivation also tends to increase with length of residence. This relation is not unexpected. To some extent it may simply be due to selection processes which places students into bilingual education programs. Spanish maintenance is the very reason some of the students born in the United States (or with long United States residence) attend bilingual education programs. So while actual Spanish skills tend to correlate negatively with residence in the United States, desire to maintain Spanish for group identification has positive correlations with length of residence.

To determine which, if any, relevant time-period divisions were responsible for the significant correlations with time shown on Table 9, scatter

plots of various variables over time were examined and analyzed. The scatter plots indicated that in many instances the significant correlations hide what is in fact a curvilinear relationship. Very low values in variables like the English language test and achievement measures are associated with periods of residence ranging from 1 to about 48 months, though there are individuals who receive high scores on these variables even after relatively short residence (i.e., < 24-48 months). After the 48 month (4 year) dividing line, there is still a wide scatter of scores on the variables under consideration, but typically no longer any clear relationship to the time axis.

The curvilinear relations described above can be illustrated by correlations of time of residence with specific variables presented in two ways: (1) including the entire data over the whole time span, and (2) excluding the initial time period of 1 to 4 years (12 to 48 months).

The comparisons of the correlation of selected variables and achievement with length of residence including and excluding the initial four-year period are presented in Table 9. Correlations that are drastically reduced by using the "truncated" data (students with four years or less of residence omitted) are underscored. A glance at Table 9 confirms that, indeed, significant correlations of length of residence with language tests found at the high school and junior high levels are vastly reduced and drop below significance levels if students with less than four years of residence are excluded. A similar phenomenon occurs with regard to achievement measures at the junior high school and high school levels. The only high school or junior high school level test administration for which the correlations of the truncated data preserve some of the original significance levels is HS 81, where especially the magnitude of the correlations of EACC and number of competencies are not affected by the cutoff. Also unaffected by the cutoff is EL2 81, evi-

dently because no more than three (or depending on the data sets) subjects have, in fact, less than four years of United States residence. (The number of subjects with less than four years of United States residence for the other test administrations are: HS 80: 10-8, HS 81: 9-11, HS 82: 19-23, JHS 81: 9-7, JHS 82: 9-8 for language tests, 5-6 for achievement tests.) In other words, with few exceptions, four years of residence does appear to be a significant cutoff point for the achievement of adequate language competence and, with it, adequate overall scholastic achievement.

The results of this investigation seem to confirm the findings of the Canadian studies (Cummins, 1981a), which suggest similar length of residence (approximately five years) as a general prerequisite for adequate linguistic and cognitive functioning in the country of the investigation's language.

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Appendix A

MEANS, STANDARD DEVIATIONS, AND RELIABILITIES (CRONBACH'S α) OF LANGUAGE TESTS*

	English Linguistic Competence				Spanish Linguistic Competence				EACC[1]				SACC[1]			
School	N	$\bar{X}$	SD	α	N	$\bar{X}$	SD	α	N	$\bar{X}$	SD	α	N	$\bar{X}$	SD	α
HS 80	65	12.94	4.63	0.90[2]	47	17.40	3.61	0.98[2]	51	37.33	10.42	0.94[2]	38	35.09	9.44	0.93[2]
HS 81	29	16.00	4.19	0.89	29	17.92	3.88	0.93	29	35.79	9.88	0.80	27	33.67	9.22	0.90
HS 82	43	7.88	7.66	0.97	36	18.08	1.84	0.63	39	18.10	13.70	0.93	37	22.57	7.44	0.70
JHS 81	27	14.26	5.15	0.92	25	16.28	2.81	0.90	30	29.93	10.42	0.92	29	23.69	9.44	0.84
JHS 82	27	14.11	5.39	0.97	25	16.48	5.33	0.95	27	29.03	10.52	0.73	24	21.75	9.71	0.82
EL1 80	18	17.22	7.48	0.90[2]	18	13.94	4.43	0.98[2]	19	30.94	7.31	0.94[2]	16	25.88	7.38	0.93[2]
EL2 81	30	16.23	2.14	0.76	28	15.75	4.10	0.88	26	38.73	7.51	0.69	24	25.79	8.40	0.82
EL3 80	32	19.18	1.28	0.90[2]	5	13.00	5.61	0.98[2]	31	37.55	8.65	0.94[2]	8	12.75	16.48	0.93[2]
EL4 80	28	14.79	3.97	0.97	28	16.04	3.32	0.99	—	—	—	—	—	—	—	—

*Male/female significant differences in mean scores were sporadic and did not show any particular pattern.

[1]Note that 1980 and 1981-1982 ACC scores are not comparable: 1980 test had 78 possible items, however, map directories (8 items were not included in elementary level administration. The 1981-1982 ACC tests consisted of 27 items and open-ended supplementa scores.

[2]Reliabilities for 1980 test administration are established by combining all schools (except EL4 80).

Appendix A (continued)

Test

School	ERCC[1]				SRCC[1]			
	N	$\bar{X}$	SD	α	N	$\bar{X}$	SD	α
HS 80	48	10.08	5.53	0.89[2]	35	12.89	3.60	0.90[2]
HS 81	31	7.06	3.53	0.79	31	16.03	3.50	0.77
HS 82	43	10.96	6.37	0.89	37	14.24	3.92	0.81
JHS 81	24	12.02	5.14	0.92	30	13.23	3.31	0.72
JHS 82	26	15.27	3.39	0.89	27	14.11	3.28	0.63
EL1 80	20	11.10	4.82	0.89[2]	19	10.74	1.49	0.90[2]
EL2 81	29	12.97	1.80	0.47	30	11.70	2.89	0.76
EL3 80	24	14.92	1.82	0.89[2]	27	5.63	2.11	0.90[2]
EL4 80	20	13.36	3.61	0.81	28	11.36	1.87	0.80

[1]The map direction test (5 items) is not included in elementary level test administration.

[2]Reliability for 1980 test administration was established by combining all schools (except EL4 80).

Appendix A (continued)

Test

School	ESoLC (Covert) N	$\bar{X}$	SD	α	ESoLC (Overt) N	$\bar{X}$	SD	α	SSoLC (Covert) N	$\bar{X}$	SD	α	SSoLC (Overt) N	$\bar{X}$	SD	α
HS 80	45	18.29	4.01	0.97[1]	45	19.11	2.95	0.98[1]	36	18.11	2.97	0.97[1]	36	18.75	2.44	0.97[1]
JHS 81	22	15.59	4.93	0.91	22	17.32	4.31	0.92	—	—	—	—	—	—	—	—
EL1 80	20	17.50	2.49	0.97	20	18.15	2.00	0.90[1]	19	14.26	3.09	0.97[1]	19	16.04	3.06	0.97[1]
EL3 80	24	17.92	2.95	0.97[1]	24	18.07	2.81	0.98[1]	14	7.57	4.09	0.97	14	6.93	3.95	0.97
EL4 80	28	17.02	3.02	0.85	28	19.25	1.78	0.85	28	17.75	2.47	0.73	28	18.09	2.03	0.79

[1]Reliability for 1980 test administration was established by combining all schools (except EL4 80).

Appendix B

MEANS, STANDARD DEVIATIONS, AND RELIABILITIES OF ENGLISH RECEPTIVE COMMUNICATIVE COMPETENCE TESTS (ERCC)

	Female			Male			Total			
School	N	$\bar{X}$	SD	N	$\bar{X}$	SD	N	$\bar{X}$	SD	Reliability Chronbach's α
HS 80	26	14.77	4.97	22	15.46	6.23	48	15.08	5.33	1
HS 81	16	18.69	3.36	15	16.40	3.70	31	7.06	3.53	0.79
HS 82	13	12.46	4.52	30	9.30	6.87	43	10.96	6.37	0.89
JHS 81	15	13.27	4.27	9	10.33	5.39	24	12.62	5.59	0.92
JHS 82	14	15.21	2.69	12	15.33	4.14	26	15.27	3.39	0.89
EL1 80	10	11.00	4.00	10	11.20	5.71	20	11.10	4.82	1
EL2 81[2]	15	13.60	1.60	14	12.29	1.98	29	12.97	1.88	0.47
EL3 80	14	15.07	1.73	10	14.70	2.00	24	14.92	1.82	1
EL4 80	11	12.55	4.03	17	13.88	3.35	28	13.36	3.61	0.81

[1]Reliability for 1980 established for entire test administration (except EL4 80) α = 0.89.

[2]Female/male difference: $p = 0.06$.

Note that elementary, junior high, and high school scores are not comparable. The map direction test (5 items) is not included in elementary level administration.

Appendix C

MEANS, STANDARD DEVIATIONS, AND RELIABILITIES OF SPANISH RECEPTIVE COMMUNICATIVE COMPETENCE TESTS (SRCC)

	Female			Male			Total			
School	N	$\bar{X}$	SD	N	$\bar{X}$	SD	N	$\bar{X}$	SD	Reliability Chronbach's α
HS 80	21	12.29	3.70	14	13.79	3.30	35	12.89	3.60	1
HS 81	16	16.81	2.99	15	15.20	3.90	31	16.03	3.50	0.77
HS 82	12	16.42	3.15	25	14.00	4.09	37	14.24	3.92	0.81
JHS 81[2]	18	14.56	2.50	12	11.25	3.47	30	13.23	3.31	0.72
JHS 82	15	13.07	2.37	12	15.42	3.85	27	14.11	3.28	0.63
EL1 80	10	11.30	0.82	9	10.11	1.83	19	10.74	1.49	1
EL2 81	15	12.47	2.77	15	10.93	2.09	30	11.70	2.89	0.76
EL3 80[3]	14	7.00	1.41	13	4.15	1.73	27	5.63	2.11	1
EL4 80	11	11.70	1.47	17	11.47	2.13	28	11.36	1.87	0.80

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[1]Reliability established in 1980 for entire test administration (except EL4 80) α = 0.90.

[2]Female/male difference: $p > .05$.

[3]Female/male difference: $p > .001$.

(For comparability of elementary level with junior high and high school tests, see note in Appendix B.)

Appendix D

MEANS, STANDARD DEVIATIONS, AND RELIABILITIES OF ENGLISH AND SPANISH SOCIOLINGUISTIC COMPETENCE TESTS

ESoLC (Covert)

	Female			Male			Total			
School	N	$\bar{X}$	SD	N	$\bar{X}$	SD	N	$\bar{X}$	SD	Reliability Chronbach's α
HS 80	26	17.96	4.16	19	18.74	2.86	45	18.29	4.01	1
JHS 81	14	16.79	2.64	8	13.50	7.73	22	15.59	4.93	0.91
EL1 80	10	18.50	1.58	10	16.50	2.80	20	17.50	2.49	1
EL3 80[2]	14	19.29	0.76	10	16.00	3.80	24	17.92	2.95	1
EL4 80	11	17.73	3.64	17	17.88	2.67	28	17.02	3.02	0.85
ESoLC (Overt)										
HS 80	26	19.00	2.06	19	19.26	2.98	45	19.11	2.95	1
JHS 81	14	18.43	1.79	8	15.30	6.57	22	17.32	4.31	0.92
EL1 80	10	19.00	0.94	10	17.30	3.56	20	18.15	2.60	1
EL3 80[2]	14	19.86	0.36	10	17.80	3.83	24	18.67	2.81	1
EL4 80	11	19.18	1.83	17	19.24	1.80	28	19.25	1.78	0.85

[1]Reliability in 1980 established for entire test administration (except EL4 80) α = 0.98.

[2]Female/male difference: $p > .05$.

Note that 1980 and 1981 tests are not exactly comparable since 1980 tests elicit covert and overt responses from the same stem (choice of 2 out of 4) while 1981 tests have separate stems for covert and overt responses (choice of 1 out of 4).

Appendix D (continued)

SSoLC (Covert)

School	Female N	Female $\bar{X}$	Female SD	Male N	Male $\bar{X}$	Male SD	Total N	Total $\bar{X}$	Total SD	Reliability Chronbach's α
HS 80	20	18.45	1.85	16	17.69	4.00	36	18.11	2.97	1
EL1 80	10	14.90	2.60	9	13.56	3.58	19	14.26	3.09	1
EL3 80[2]	7	5.57	3.31	7	9.57	3.99	14	7.57	4.09	1
EL4 80	11	17.55	2.80	17	17.88	2.15	28	17.75	2.47	0.73

SSoLC (Overt)

HS 80	20	18.75	2.05	16	18.75	2.93	36	18.75	2.44	1
EL1 80	10	17.30	3.27	9	16.33	2.92	19	16.04	3.06	1
EL3 80	7	7.57	4.20	7	6.29	3.98	14	6.93	3.95	1
EL4 80	11	18.23	2.57	17	19.29	1.53	28	18.09	2.03	0.79

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[1]Reliability in 1980 established for entire test administration (except EL4 80) = 0.98.

[2]Female/male difference: $p > .05$.

Appendix E

MEANS, STANDARD DEVIATIONS, AND RELIABILITY OF ENGLISH LANGUAGE COMPETENCE TESTS
BAHIA Oral Language Test

	Female			Male			Total			
School	N	$\bar{X}$	SD	N	$\bar{X}$	SD	N	$\bar{X}$	SD	Reliability Chronbach's α
HS 80	34	12.24	4.50	31	13.71	4.72	65	12.94	4.63	1
HS 81	14	15.57	5.12	15	16.40	3.22	29	16.00	4.19	0.89
HS 82	13	9.92	7.82	30	7.00	7.82	43	7.88	7.66	0.97
JHS 81	18	14.56	5.58	9	13.67	4.42	27	14.26	5.15	0.92
JHS 82	15	14.87	5.79	12	13.17	4.95	27	14.11	5.39	0.97
EL1 80	10	16.90	1.53	8	17.63	1.41	18	17.22	7.48	1
EL2 81	15	15.73	1.75	15	16.73	2.43	30	16.23	2.14	0.76
EL3 80	16	19.19	1.42	16	19.19	1.17	32	19.18	1.28	1
EL4 80[2]	11	12.64	5.34	17	16.18	1.55	28	14.79	3.97	0.97

[1]Reliability in 1980 was established for entire test administration (except EL4): 0.90.

[2]Male/female difference: $p < .05$.

Appendix F

MEANS AND STANDARD DEVIATIONS OF MOTIVATION SCALES

		Female			Male			Total		
Type Motivation	School	N	$\bar{X}$	SD	N	$\bar{X}$	SD	N	$\bar{X}$	SD
Spanish Integrative	HS 82	8	9.88	2.03	15	9.93	1.44	23	9.94	1.62
	JHS 82	3	10.33	1.15	8	9.88	1.36	11	10.00	1.26
English Integrative	HS 82	8	10.63	1.77	15	10.27	1.67	23	10.39	1.67
	JHS 82	4	9.75	1.26	7	9.14	0.90	11	9.36	1.02
Spanish Instrumental*	HS 82	8	11.13	0.99	15	9.27	1.54	23	9.91	1.62
	JHS 82	4	9.50	1.73	8	10.50	1.20	12	10.17	1.40
English Instrumental	HS 82	8	11.50	0.75	15	10.73	1.62	23	11.00	1.09
	JHS 82	4	10.75	0.95	7	10.71	1.25	11	10.73	1.10

*Female/male difference: $p > .01$.

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